

REMARKS/ARGUMENTS

Claims 1-14 and 16-21 and new Claims 22 and 23 are active in the case.

Reconsideration is respectfully requested.

The present invention relates to a laminating adhesive comprising a mixture of a polymer obtained from free-radical polymerizable compounds and a compound containing unsaturated groups and having a molecular weight less than 5000 g/mol.

Claim Amendments

Claim 1 has been amended to recite that the laminate of the claimed method is a high gloss film laminate or a composite film laminate. In the event the laminate is the high gloss film laminate, then the substrate is either a paper or card. In the event the laminate is a composite film laminate, then the substrate is a polymer film, a metallized film or a metal foil. Support for these aspects of the invention can be found on page 12, lines 25-33.

Support for new Claim 23 can be found in previously amended Claim 1, while support for new Claim 22 can be found in the above indicated portion of page 12. Entry of the amendments to Claim 1 and the new claims is respectfully requested.

Claim Rejection, 35 USC 103

Claims 1-9, 11-14 and 16-20 stand rejected based on 35 USC 103(a) as obvious over Schrof et al, U. S. Patent Publication 2003/0175506 (WO 01/84544) in view of Ha et al 2002/0032251. This ground of rejection is respectfully traversed.

The Schrof et al publication is essentially not relevant to the present invention as claimed. As discussed on page 1 of the text, the document describes a radiation cross-linkable polymer composition as a data recording medium. The coating composition as described therein (see paragraph [0004]) is capable of being subjected to UV radiation (position

resolved irradiation) which is thereby imprinted with information which can be read using appropriate reading instrumentation. The composition of the document is comprised of at least one free-radically polymerizable, radiation cross-linkable addition polymer that is formed from monomers containing at least one ethylenically unsaturated group. A preferred composition is formulated of an addition polymer that is composed of primarily of monomers that contain at least one ethylenically unsaturated group ((0052]) and minor amounts and a fluorescence chromophore. From this description of the Schrof et al publication, it is clear that is far from the subject matter of the present invention. In the first place, the two component formulation of the invention is a laminating adhesive which is not capable of, or at least shown to be capable, of being impacted with irradiation such that it is able to be imprinted with readable information. Rather, the primary role of the claimed formulation of the invention is as an adhesive to prepare a high gloss laminate or a composite film laminate. Secondly, while the adhesive of the present invention is formulated of two principal components which are (A) a polymer comprised of free-radically polymerized compounds, and (B) a compound that is comprised of ethylenically unsaturated, free-radically polymerizable groups, wherein the compounds have a weight-average molecular weight of less than 5000 g/mol, the composition of the publication, as admitted by the Examiner, lacks a compound that is equivalent to compound (B) of the present claims. Accordingly, the composition of the present claims acts entirely differently as an adhesive from the UV cross-linkable composition of the reference which stores information upon being impacted with positioned-resolved irradiation. Clearly, the reference does not show or suggest either a transparent film on paper or a card, or a composite film laminate which is suitable as a packaging material.

Of additional significance is that the radiation crosslinkable polymer of the publication has a glass transition temperature that ranges from -60° to $<200^{\circ}$ C. On the other

hand, the present claims (new Claim 23) requires that the polymer component (A) have a T_g ranging from -55° to 0° C. Although an overlap exists between the two ranges to the extent that the presently claimed range falls within the scope of the range of the publication, nevertheless, the range of the present claims is materially narrower than that of the publication meaning that, in fact, the present polymer component (A) is significantly different from the crosslinkable polymer of the publication.

Applicants submit that the Ha et al publication is not properly combinable with the Schrof et al publication, because, while Schrof et al discloses a beam cross-linkable polymer composition that is capable of storing data imprinted in a layer of the composition, the composition disclosed by Ha et al has no such property, but rather is an adhesive that is useful for bonding the metal and polymer substrates together of recording discs of the DVD type. There is no teaching in Ha et al that the adhesive itself has data information storage ability. Rather, the composition merely acts as an adhesive between layers. The Examiner states that *one of skill in the art would have modified Schrof et al to include compounds B) (reactive diluent B of Ha et al) that comprise ethylenically unsaturated, free-radically polymerizable groups wherein the compounds of Ha et al have a weight average M_w of less than 5000 g/mol in view of Ha et al*. However, applicants contend to the contrary that one of skill would **not** have been motivated by the two references to selectively use the reactive acrylate functional diluent (B) (or reactive acrylate diluent (C) for that matter) of Ha et al, because Schrof et al disclose no need for a functionally active compound such as reactive diluent in the crosslinkable polymer material disclosed. A preferred embodiment of the composition of Schrof et al is one in which the polymer composition contains a radiation activatable compound such as acetophenone, benzophenone, or the like. Another possible ingredient is a fluorescence chromophore such as coumarin, bistilbene, perylene, or the like. The fluorescence chromophore takes part in the UV induced cross-linking reaction. By this

means fluorescence is effectively suppressed at the areas exposed to light. A synergistic effect preferentially occurs. That is, targeted exposure of the photoinitiator to light, and thus absorption of the radiation by the photoinitiator, leads to efficient quenching of the fluorescence chromophore. In view of these particular conditions applicants submit that there would be ample reason **not** to add an acrylate reactive diluent such as found in Ha et al to the composition of Schrof et al in view of expected undesirable interference with the information storage ability of the composition of the patent. Thus, the motivation to combine the two major references is not evident.

Further as to the matter of the reactive diluents, the present text on pages 7 and 8, in discussing compound (B), states that it may be the likes of an acrylic monomer such as one of those used to prepare polymer (A) or it also may be a non-acrylate monomer such as a vinyl aromatic compound, a vinyl ester, a vinyl halide, an ethylenically unsaturated nitrile, or the like. This group of materials includes both reactive diluents (B) and (C) of Ha et al. In any event, applicant remain of the opinion that one of skill in the art would not find the motivation in the primary publications of record to effect the addition of a reactive diluent of Ha et al to the polymer material described in Schrof et al an arrive at the present invention.

Applicants also submit that the two primary references can not be properly combined with an end view, as claimed in the present invention, of making specific laminates as described in the present claims. That is, the presently amended claims specify that if a high gloss film laminate is desired, then the substrate that is used is either paper or a card. On the other hand and when the laminate is a composite film laminate, then the substrate is a polymer films, a metallized film or a metal foil. On the other hand, Ha et al formulates an adhesive that is specifically designed to bind sputter-coated metallized or siliconized, polycarbonate substrates to UV-cured lacquer surfaces, while Schrof et al do not formulate an adhesive as such (not denying that the photochemically active composition disclosed therein

has some adhesivity), but rather a radiation cross-linkable polymer system which functions as a data recording medium. In view of the substantial differences in properties and adhesivities of the three compositions discussed, how would one of skill in the art be led by the cited two references that teach polymer based compositions of two substantially different types that function quite differently, to the laminate of the present invention that, although functioning as an adhesive, does so in a completely different technical field from either of the two publications of preparing high gloss laminates and composite packaging laminates? Clearly, the combined publications do not suggest the invention as claimed.

Applicants also refer to the comparative evidence demonstrated in the examples of the present specification. Polymers A1 and A2 were prepared each being composed of the same monomers. (Polymer A1 was prepared from a copolymerizable benzophenone containing monomer mixture, while polymer A2 was prepared from a monomer mixture that did not contain a copolymerizable benzophenone component.) A number of polymer compositions were prepared by combining a polymer (A) with alkoxylated trimethylolpropane triacrylate as compound (B), each time in admixture with either benzophenone or Irgacure 184 as a photoinitiator. Pages 15 and 16 describe the preparation of high gloss laminates and their applications to cards, which were then subjected to embossment, fluting and strength of adhesion (page 16). Table 4 on page 19 shows the results obtained upon embossment. All four compositions tested essentially show the same good results. Fluting of card samples was conducted and the results of four examples are shown in Table 3 on page 18. Again all four examples show essentially the same good results with respect to groove appearance. Finally, the four compositions were tested for strength of adhesion as described and shown on page 17 of the text. The compositions formed from reaction mixtures containing benzophenone as the photosensitizer result in bonded structures

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of superior immediate and longer term durations than those formed in the presence of
Irgacure as the photosensitive agent.

Applicants maintain their position as stated with respect to the Higbie et al patent. is
cited in view of the secondary aspects of the invention in Claim 10. Since the patentability of
Claim 10 does not depend upon the subject matter of the claim, and since the reference does
not overcome the deficiencies of the two cited primary references, the claim stands separately
patentable and withdrawal of the rejection is respectfully requested.

It is now believed that the application is in proper condition for allowance. Early
notice to this effect is earnestly solicited.

Respectfully submitted,

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